What is claimed is:

1. A magnetoresistive device comprising:

a magnetoresistive element having two surfaces that face toward opposite directions and two side portions that connect the two surfaces to each other;

two bias field applying layers that are located adjacent to the side portions of the magnetoresistive element and apply a bias magnetic field to the magnetoresistive element; and

two electrode layers that feed a current used for signal detection to the magnetoresistive element, each of the electrode layers being adjacent to one of surfaces of each of the bias field applying layers; wherein

at least one of the electrode layers overlaps one of the surfaces of the magnetoresistive element;

the magnetoresistive element incorporates: a nonmagnetic layer having two surfaces that face toward opposite directions; a soft magnetic layer adjacent to one of the surfaces of the nonmagnetic layer; a pinned layer, located adjacent to the other one of the surfaces of the nonmagnetic layer, whose direction of magnetization is fixed; and an antiferromagnetic layer located adjacent to one of surfaces of the pinned layer that is farther from the nonmagnetic layer, the antiferromagnetic layer fixing the direction of magnetization of the pinned layer; and

the pinned layer includes a nonmagnetic spacer layer and two ferromagnetic layers that sandwich the spacer layer and have directions of magnetization fixed to opposite directions.

2. The magnetoresistive device according to claim 1 wherein a total

length of regions of the two electrode layers that are laid over the one of the surfaces of the magnetoresistive element is smaller than 0.3 μm.

3. The magnetoresistive device according to claim 2 wherein both of the two electrode layers overlap the one of the surfaces of the magnetoresistive element, and a length of the region of each of the two electrode layers that is laid over the one of the surfaces of the magnetoresistive element is smaller than 0.15 μm.

4. The magnetoresistive device according to claim 1 wherein the two bias field applying layers are located off one of the surfaces of the magnetoresistive element.

5. The magnetoresistive device according to claim 1 wherein a space between the two electrode layers is equal to or smaller than approximately 0.6 μm.

6. A method of manufacturing a magnetoresistive device comprising:

a magnetoresistive element having two surfaces that face toward opposite directions and two side portions that connect the two surfaces to each other;

two bias field applying layers that are located adjacent to the side portions of the magnetoresistive element and apply a bias magnetic field to the magnetoresistive element; and

two electrode layers that feed a current used for signal detection to the magnetoresistive element, each of the electrode layers being adjacent to one

of surfaces of each of the bias field applying layers; the method including the steps of:

forming the magnetoresistive element;

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forming the bias field applying layers; and

forming the electrode layers; wherein:

at least one of the electrode layers are located to overlap one of the surfaces of the magnetoresistive element;

the magnetoresistive element incorporates: a nonmagnetic layer having two surfaces that face toward opposite directions; a soft magnetic layer adjacent to one of the surfaces of the nonmagnetic layer; a pinned layer, located adjacent to the other one of the surfaces of the nonmagnetic layer, whose direction of magnetization is fixed; and an antiferromagnetic layer located adjacent to one of surfaces of the pinned layer that is farther from the nonmagnetic layer, the antiferromagnetic layer fixing the direction of magnetization of the pinned layer; and

the pinned layer includes a nonmagnetic spacer layer and two ferromagnetic layers that sandwich the spacer layer and have directions of magnetization fixed to opposite directions.

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7. The method according to claim 6 wherein a total length of regions of the two electrode layers that are laid over the one of the surfaces of the magnetoresistive element is smaller than 0.3 μm.

8. The method according to claim 7 wherein both of the two electrode layers overlap the one of the surfaces of the magnetoresistive element, and a length of the region of each of the two electrode layers that is laid over the

one of the surfaces of the magnetoresistive element is smaller than 0.15 μm.

9. The method according to claim 6 wherein the two bias field applying layers are located off one of the surfaces of the magnetoresistive element.

10. The method according to claim 6 wherein a space between the two electrode layers is equal to or smaller than approximately 0.6 μm.

11. A thin-film magnetic head comprising:

a magnetoresistive element having two surfaces that face toward opposite directions and two side portions that connect the two surfaces to each other;

two bias field applying layers that are located adjacent to the side portions of the magnetoresistive element and apply a bias magnetic field to the magnetoresistive element; and

two electrode layers that feed a current used for signal detection to the magnetoresistive element, each of the electrode layers being adjacent to one of surfaces of each of the bias field applying layers; wherein

at least one of the electrode layers overlaps one of the surfaces of the magnetoresistive element;

the magnetoresistive element incorporates: a nonmagnetic layer having two surfaces that face toward opposite directions; a soft magnetic layer adjacent to one of the surfaces of the nonmagnetic layer; a pinned layer, located adjacent to the other one of the surfaces of the nonmagnetic layer, whose direction of magnetization is fixed; and an antiferromagnetic layer located adjacent to one of surfaces of the pinned layer that is farther from the

nonmagnetic layer, the antiferromagnetic layer fixing the direction of magnetization of the pinned layer; and

the pinned layer includes a nonmagnetic spacer layer and two ferromagnetic layers that sandwich the spacer layer and have directions of magnetization fixed to opposite directions.

12. The thin-film magnetic head according to claim 11 wherein a total length of regions of the two electrode layers that are laid over the one of the surfaces of the magnetoresistive element is smaller than 0.3 μm.

13. The thin-film magnetic head according to claim 12 wherein both of the two electrode layers overlap the one of the surfaces of the magnetoresistive element, and a length of the region of each of the two electrode layers that is laid over the one of the surfaces of the magnetoresistive element is smaller than 0.15 μm.

14. The thin-film magnetic head according to claim 11 wherein the two bias field applying layers are located off one of the surfaces of the magnetoresistive element.

15. The thin-film magnetic head according to claim 11 wherein a space between the two electrode layers is equal to or smaller than approximately 0.6 μm.

16. A method of manufacturing a thin-film magnetic head comprising:

a magnetoresistive element having two surfaces that face toward

opposite directions and two side portions that connect the two surfaces to each other;

two bias field applying layers that are located adjacent to the side portions of the magnetoresistive element and apply a bias magnetic field to the magnetoresistive element; and

two electrode layers that feed a current used for signal detection to the magnetoresistive element, each of the electrode layers being adjacent to one of surfaces of each of the bias field applying layers; the method including the steps of:

forming the magnetoresistive element;

forming the bias field applying layers; and

forming the electrode layers; wherein:

at least one of the electrode layers are located to overlap one of the surfaces of the magnetoresistive element;

the magnetoresistive element incorporates: a nonmagnetic layer having two surfaces that face toward opposite directions; a soft magnetic layer adjacent to one of the surfaces of the nonmagnetic layer; a pinned layer, located adjacent to the other one of the surfaces of the nonmagnetic layer, whose direction of magnetization is fixed; and an antiferromagnetic layer located adjacent to one of surfaces of the pinned layer that is farther from the nonmagnetic layer, the antiferromagnetic layer fixing the direction of magnetization of the pinned layer; and

the pinned layer includes a nonmagnetic spacer layer and two ferromagnetic layers that sandwich the spacer layer and have directions of magnetization fixed to opposite directions.

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17. The method according to claim 16 wherein a total length of regions of the two electrode layers that are laid over the one of the surfaces of the magnetoresistive element is smaller than 0.3 μm.

18. The method according to claim 17 wherein both of the two electrode layers overlap the one of the surfaces of the magnetoresistive element, and a length of the region of each of the two electrode layers that is laid over the one of the surfaces of the magnetoresistive element is smaller than 0.15 μm.

19. The method according to claim 16 wherein the two bias field applying layers are located off one of the surfaces of the magnetoresistive element.

20. The method according to claim 16 wherein a space between the two electrode layers is equal to or smaller than approximately 0.6 μm.